Appendix A
HARP How-To Guides

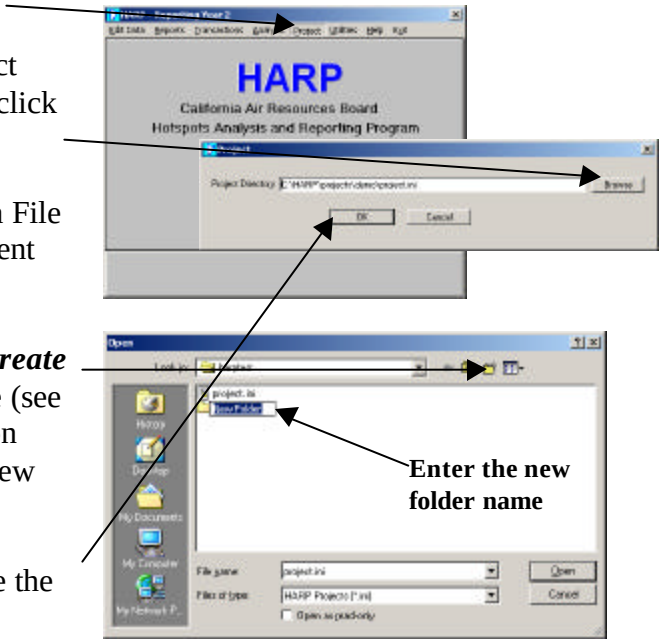
The HARP How-To Guides are supplemental instruction aids to the user guide. They provide steps-by-step procedures to carry out some of the basic functions of HARP. The guides were written in a manner that assumes the reader has a basic understanding of HARP. For detailed information about HARP, please see the user guide.

Topic 1: How to Start a Project

Step 1. Creating a Project Folder

The first thing you need to do is to tell HARP where to save all of the files it creates.

1. From the HARP main menu, select ***Project***.
2. A popup window will show the current project directory. To select a new project directory, click on ***Browse***.
3. To change the project directory, use the Open File dialogue box to browse and switch to a different directory. Then click on ***Open***.
4. To create a new project directory, click the ***Create New Folder*** icon. Enter the new folder name (see Note 1). Then click on the right mouse button and choose ***Refresh***. Double-click on your new folder to open it. Then click on ***Open***.
5. Click on ***OK*** on the project window to change the project directory.



Note 1: There can be no spaces in the file name or path that you create.

Step 2. Opening a Database

Next, you will need to open the facility and emissions database file.

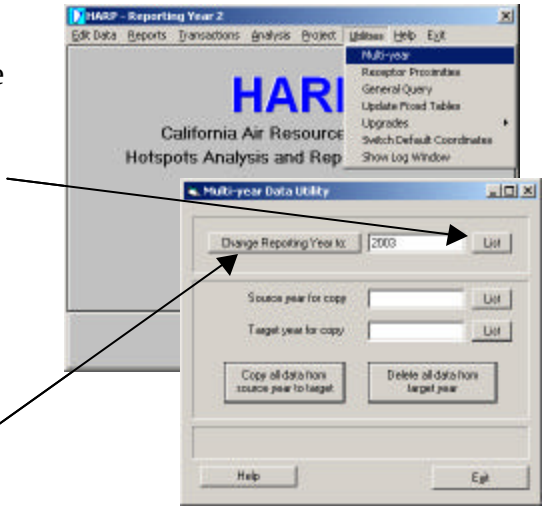
1. From the HARP main menu, select ***Edit Data/Open Database***.
2. In the dialog window, browse and select the default database *HARP.mdb* (C:\HARP\HARP.mdb). Then click on ***Open***.

Note 2: You cannot create a new database from scratch. If you wish to create a new database, you must highlight the default HARP database file, then click on the right mouse button and select *Copy*. Click on the right mouse button again and choose *Paste*. Once the file has been copied, you must rename the file. Highlight the new file and then click on the right mouse button and choose *Rename*. The file name should contain no spaces.

Step 3. Selecting a Reporting Year

Next, select the year that you would like the emissions information to be stored in. If you are creating an emissions database for CEIDARS reporting purposes, the year should match the year of the data.

1. From main menu, select ***Utilities/Multi-year***.
2. The current reporting year will be displayed in the top field. To change the reporting year, press the ***List*** button. Double-click on the year you want the information to be stored in.
3. If the year you want is not available from the list, press ***Cancel*** and return to the previous screen. Enter the new reporting year in the top field.
4. Then click the button labeled ***Change Reporting Year To***. REMEMBER: HARP will not change the reporting year until you press this button. Then click on ***Open***. (Note 3)
5. You also have the option of copying data from an existing year to the newly created reporting year.



Note 3: Labeling a reporting year with a negative symbol will result in the data being overwritten when the HARP database is updated.

Step 4. Using a Common Coordinate System

HARP can convert all location coordinates into one common coordinate system. Use this feature to convert facilities in different location coordinates to a common coordinate system or to switch an entire analysis to a different projection system.

1. To convert all UTM location coordinates into the same coordinate system select ***Utilities/Switch Default Coordinates***. The default is NAD83. Click on the radio button next to the desired coordinate system. Click ***Apply*** and then ***Exit***

Topic 2: How to Add Data to the Facility and Emission Inventory Database

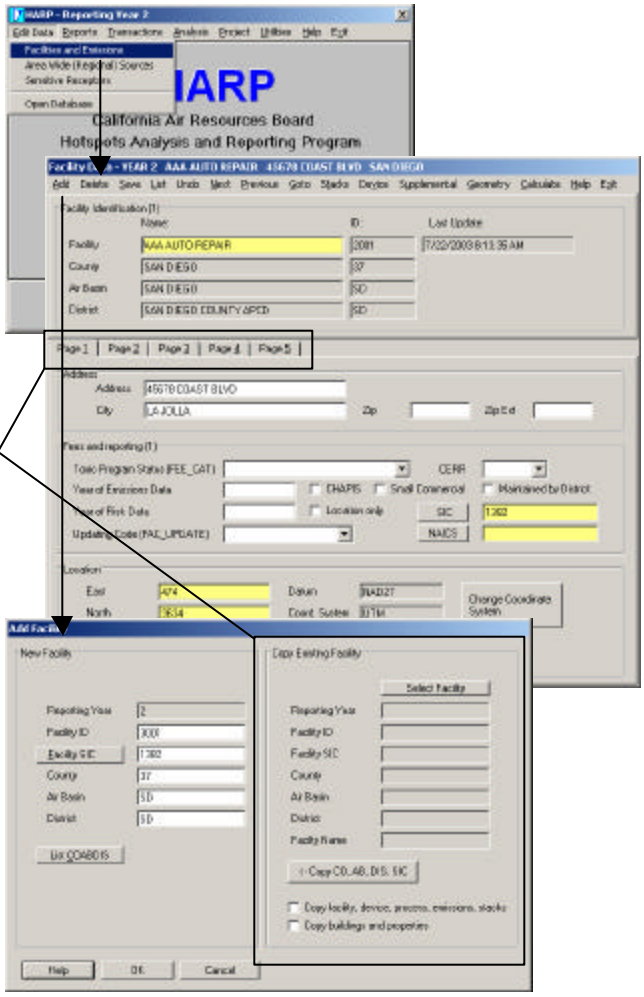
HARP's facility and emission inventory database, also known as CEIDARS-Lite (California Emission Inventory Development and Reporting System-Lite), can be used by facility operators and local air district staff to organize and manage their criteria and toxics emissions data. The database can also be exported to submit emissions data directly to either the local air district or to the ARB. For more information on setting up an emission inventory database, see Chapters 4 and 5 in the HARP User Guide.

Prerequisite

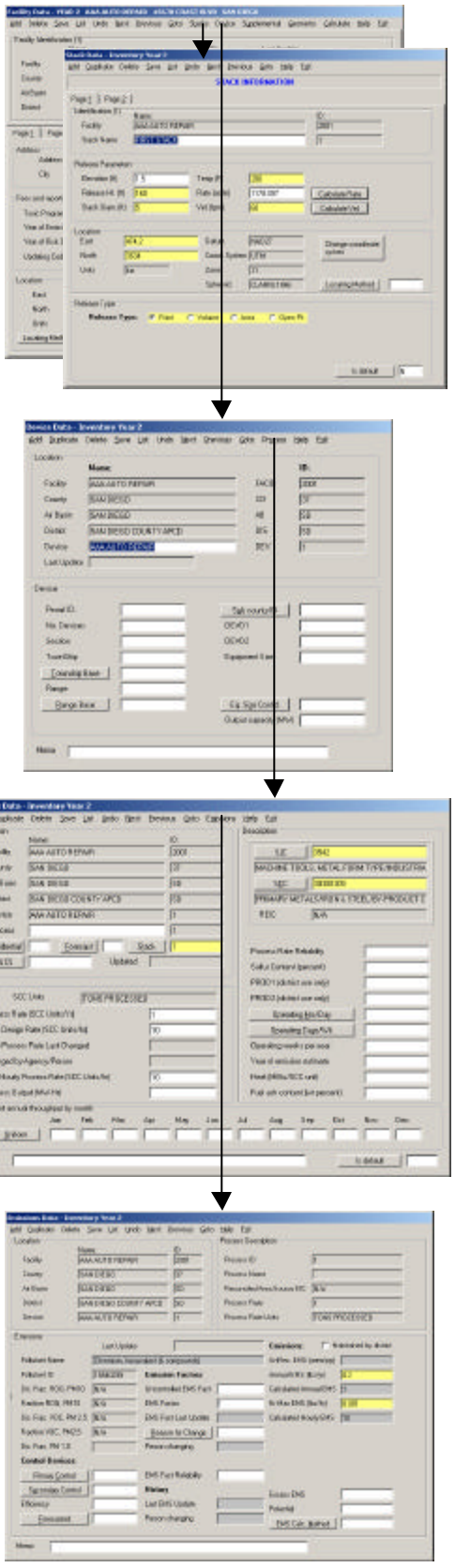
Before you can add your data to the emissions inventory database, you must first open a project in HARP (See Topic 1 in the How-To Guide for instructions).

Step 1. Adding Facility and Emission Data

1. To begin adding your facility data, select ***Edit Data/Facilities and Emissions*** from the HARP main menu to enter the ***Facility Data*** window.
2. To add a new facility, click on ***Add*** from the top menu. Fill in all blank fields in the ***Add Facility*** window. Use the buttons in this section to help fill in the information. If the new facility is similar to an existing facility, you can copy all or part of an existing facility into the new record using the ***Copy Existing Facility*** section. Click ***OK***.
3. Fill in all blank fields in the ***Facility Data*** window for pages 1-5. The yellow fields are required if you plan to conduct a health risk analysis. For instructions on how to enter the receptor proximity on Page 3 of the ***Facility Data*** window, see Topic 2 for setting property boundary information, Topic 3 for identifying sensitive receptors, and Topic 4 for entering receptor proximity information without using sensitive receptors or property boundary information. Click ***Save*** from the top menu.



4. To add stack information click on ***Stacks*** from the ***Facility Data*** window. Click on ***Add*** from the new window. Fill in all blank fields for the stack. The yellow cells are required if you plan to conduct a health risk analysis. If you want to copy an existing stack, click ***List*** and double click on a stack of interest from the popup window. HARP will display the data for this stack. Then click on ***Duplicate*** and enter a new unique stack identification number. Click ***Save*** and ***Exit*** when finished.
5. To add the device information, click on ***Device*** from the ***Facility Data*** window. Click on ***Add*** from the new window. Fill in all blank fields for the device. If you want to copy an existing device, click ***List*** and pick a device of interest from the popup list window. Then click on ***Duplicate*** and enter a new unique device identification number. Click ***Save*** when finished.
6. To add the process information, click on ***Process*** from the ***Device Data*** window. Click on ***Add*** from the new window. Fill in all blank fields for the process information. If you want to copy existing process information, click ***List*** and double click on a process of interest from the popup window. Then click on ***Duplicate*** and enter a new unique process identification number. Click ***Save*** when finished.
7. To add the emissions information, click ***Emissions*** from the ***Process Data*** window. To add a new pollutant, click on ***Add.*** If you want to copy existing pollutant information, click ***List*** and double click on a pollutant of interest from the popup window. Then click on ***Duplicate*** and enter a new pollutant identification number. Click ***Save*** when finished.
8. Exit out of the ***Emission***, ***Process***, and ***Device*** windows to return to main ***Facility Data*** window



Step 2. Defining Building Geometry

Next, you will need to enter the data for the building and property geometry. This information will be used to calculate building downwash in the dispersion analysis to generate property boundary receptors (See the HARP User Guide for more information).

1. From the main ***Facility Data*** window, click ***Geometry/Buildings.***
2. To add a new building, click on ***Add***. Enter ID number, number of corners, and Tier number. Click ***OK***.
3. Enter the building description, height, and elevation. Click on ***Save***.
4. Select ***Edit Points***, to enter/edit the vertex points for the building. Enter the relative distance for each point (See the illustration below for help on inputting). Click on ***Exit*** to return to the main Building Geometry window.
5. Repeat the above steps to add more buildings or tiers. (Window Legend: The currently selected building tier is shown in red. Stacks are shown as small red circles (solid line). The diameter of the circle is the diameter of the stack. The large dotted circle around each stack is merely a visual aid to make it easier to locate the stacks on the map when the map scale is small. The diameter of the dotted circles has no significance.)

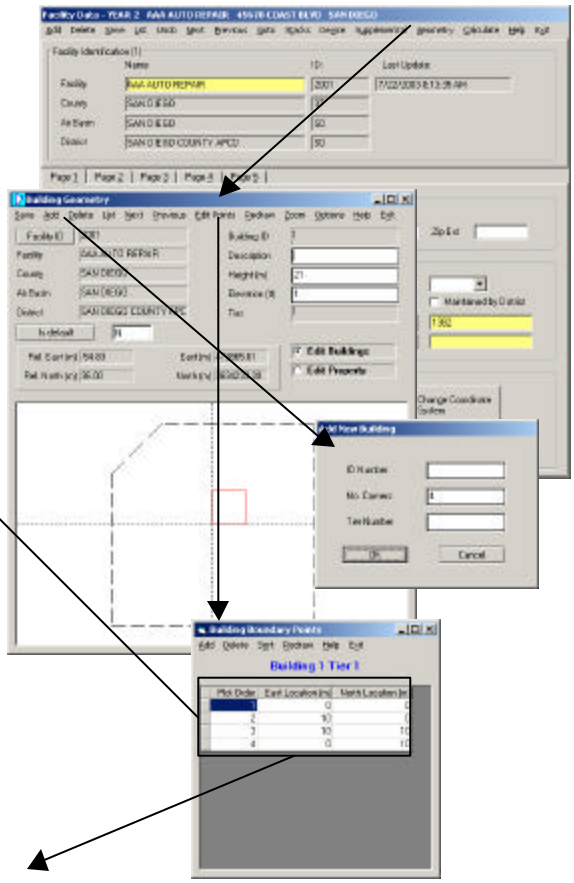
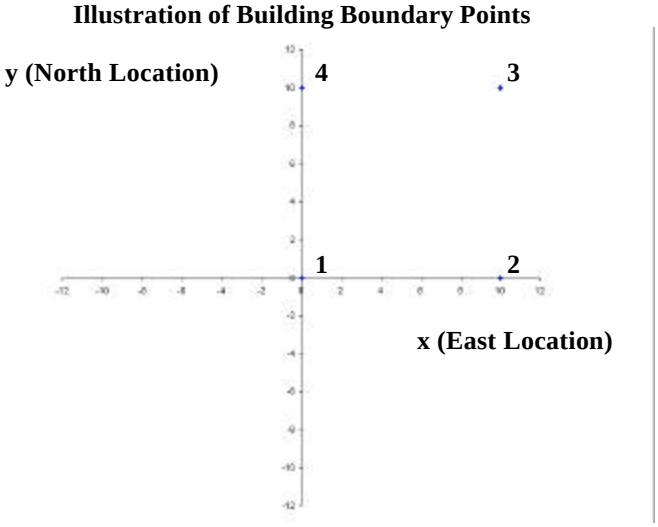


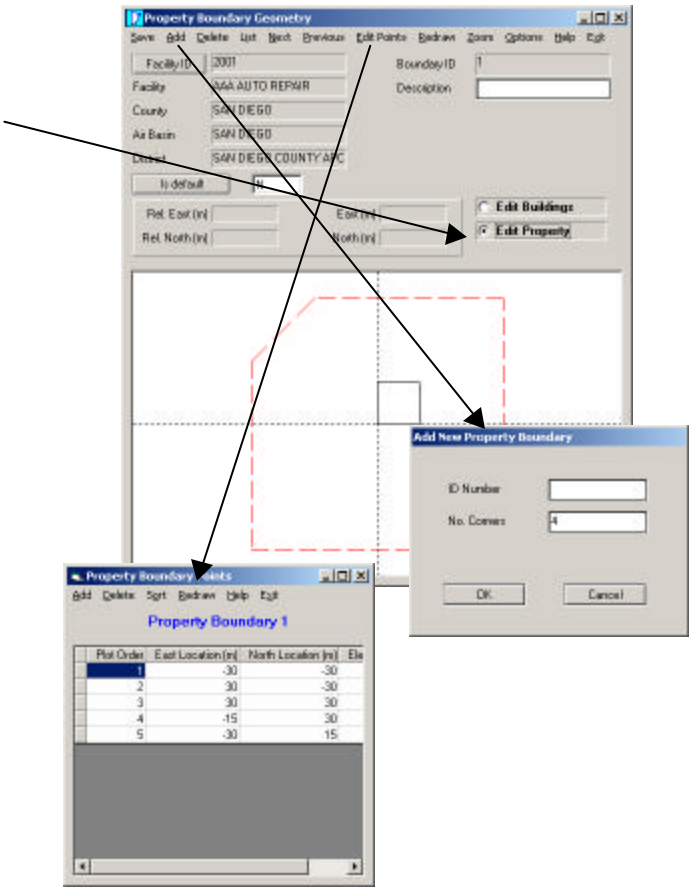
Illustration of Building Boundary Points



Step 3. Defining Property Geometry

Next, you will need to enter the property boundary data. Property boundary data is used to locate boundary receptors along the property boundary for risk analysis. Once the property boundaries have been identified, HARP can generate receptors at regular intervals along the boundary automatically so that you do not have to figure out the UTM coordinates of each boundary receptor. Each facility may have one or more property boundaries. The boundary curves do not have to be connected. (See the HARP User Guide for more information.)

1. To add information on the property boundary, click ***Geometry/Property boundaries*** from the main ***Facility Data window*** or click on the ***Edit Property*** radio button on the ***Property Boundary Geometry*** window
2. To add a new property boundary, click on ***Add*** from the top menu. Enter ID number and number of corners. Click ***OK***
3. Enter building description. Click on ***Save***.
4. Select ***Edit Points***, to enter/edit the vertex points for the property boundary. Enter the relative distance for each point. Click on ***Exit*** to return to the ***Property Boundary Geometry*** window.
5. Repeat the above steps to add more property boundaries to the database. When all of your facilities are entered, return to the HARP main menu. From the HARP Main window you can create reports from the database, export the database to a third party, or set-up and air dispersion run on data within the database.



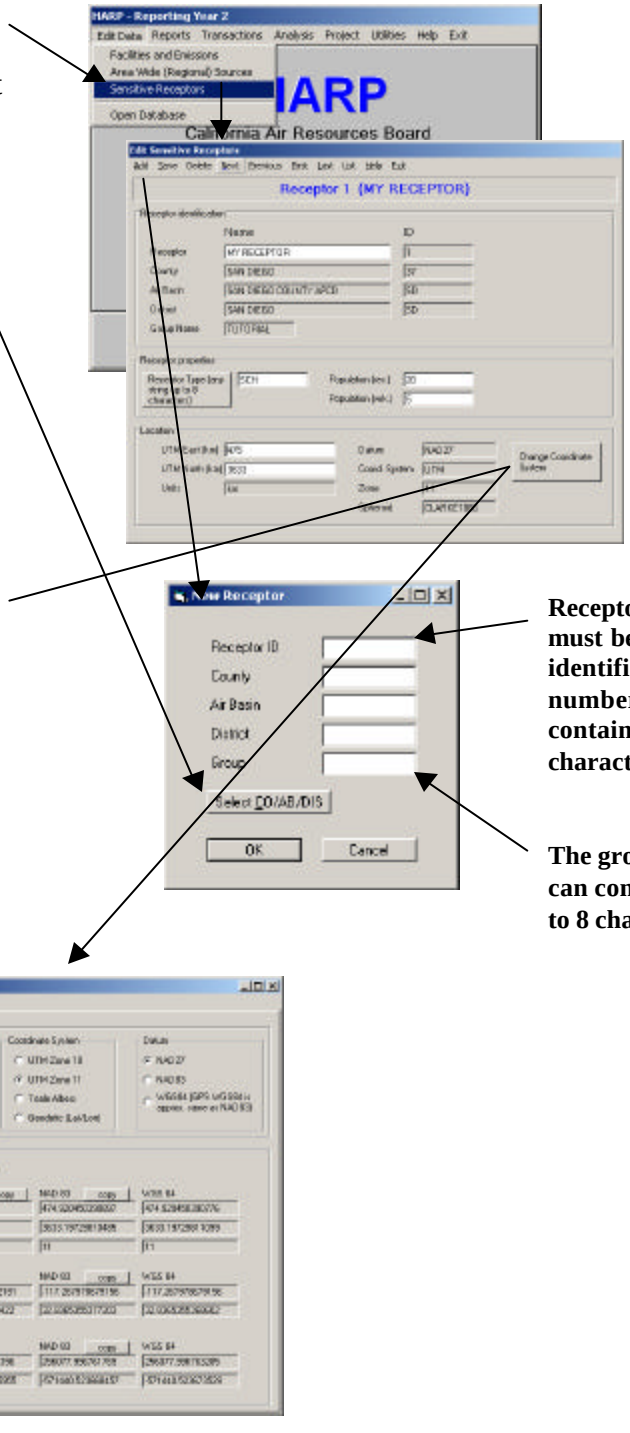
Topic 3: How to Create/Edit/Export/Import Sensitive Receptors

Prerequisite

Before you can create, edit, import, or export sensitive receptors, you must open a project (See Topic 1 in the HARP How-To Guides for instructions). For more information on sensitive receptors, see Chapters 5 and 4 in the HARP User Guide.

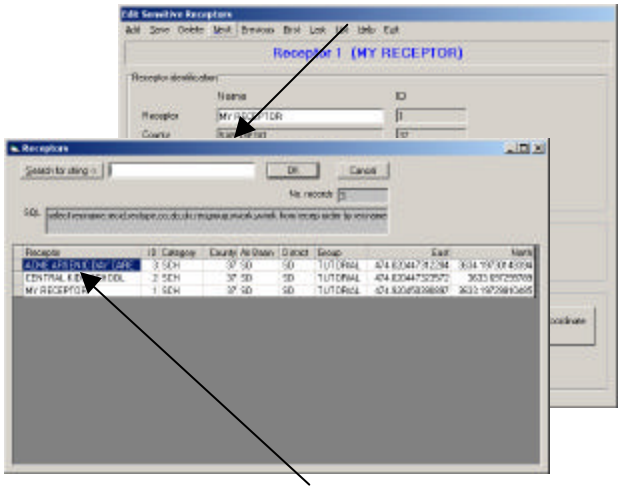
Step 1. Creating a Sensitive Receptor

1. From the HARP main menu, click ***Edit Data/Sensitive Receptors*** to access the Edit Sensitive Receptor window.
2. To add a new receptor, click ***Add*** from the top menu. Enter the information into the popup window. You may use the ***Select CO/AB/District*** button to automatically add county, air basin, and district information. Click ***OK*** to return to the previous window.
3. When you return to the ***Edit Sensitive Receptor*** window, it will now display the new receptor. Fill in the remaining blank fields.
4. To change the coordinate system, click the ***Change Coordinate System*** button to access the Coordinate Conversion window. Here, you may change the coordinate system by clicking the radio buttons at the top of the window. You may also convert your coordinates by clicking on the ***Copy*** button next to the coordinate system of your choice. Click ***Accept*** from the top menu to update the receptor information.

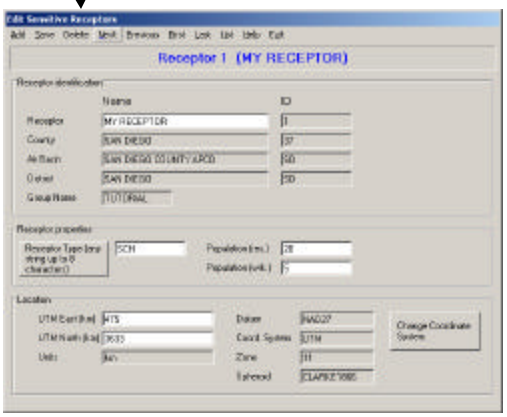


Step 2. Edit a Receptor

1. To edit a sensitive receptor, access the ***Edit Sensitive Receptors*** window.
2. Click ***List*** at the top of menu. A window will popup displaying all sensitive receptors in your database.
3. Browse and double click on the sensitive receptor that you wish to edit. By doubling-clicking, it will return you to the ***Edit Sensitive Receptor*** window with the selected receptor information displayed. You may edit all information highlighted in white.
4. To delete a receptor, select a receptor using the ***List*** function. Press ***Delete*** at the top menu to delete the receptor.



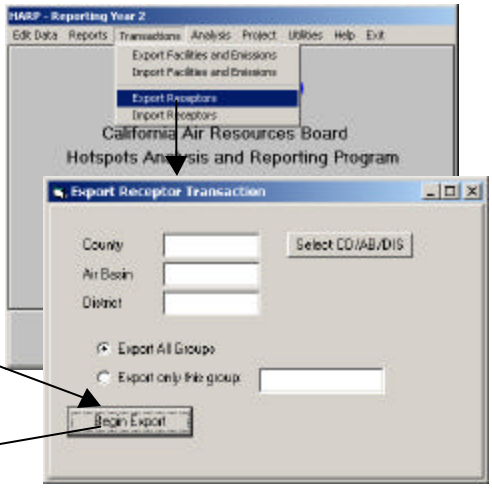
Double click on a receptor to edit

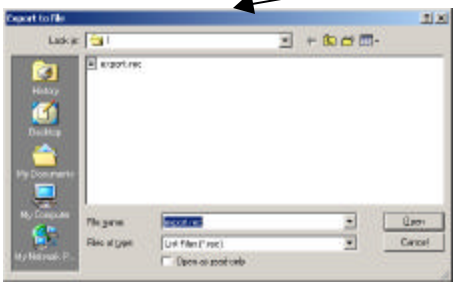


Step 3. Exporting Receptors

The transaction module of HARP allows receptor information to be shared with other HARP users. The module generates a transaction file, which can be easily imported into HARP on another computer.

1. From the HARP main menu, click ***Transaction/Export Receptors***.
2. Type in the county, air basin, district, or specific group of receptors you wish to export. Alternatively, you may click the ***Select CO/AB/DIS*** button to select a specific county, air basin, and district.
3. Click the ***Begin Export*** button to export the receptors. Unless otherwise specified, HARP will by default save the file as "export.rec" to your project directory. Click ***Open*** to create the file.

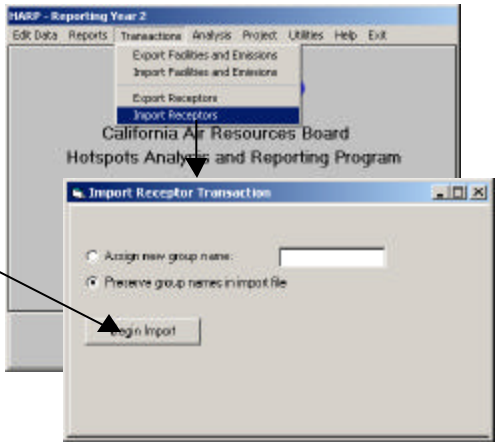




Step 4. Importing Receptors

HARP requires a specific file format for importing receptors.

1. First, make sure that your transaction file is copied to your project directory in HARP.
2. From the HARP main menu, click ***Transaction/Import Receptors***.
3. Click the ***Begin Import*** button. Browse and double click on the receptor file. A popup window will appear informing you that HARP has finished importing the receptors.



Topic 4: How to Perform a Prioritization Analysis

HARP performs the prioritization calculations in accordance with the guidelines set forth by the California Air Pollution Control Officers Association in the document entitled *CAPCOA Air Toxics "Hot Spots" Program Facility Prioritization Guidelines (July 1990)*. In addition, the HARP software automatically applies the appropriate molecular weight adjustment factor (MWAF) for each Hot Spots substance; therefore, facility emissions should not be manually adjusted before entering them into HARP (see Appendix I for a list of MWAFs, Chapter 4 of the OEHHA Guidance Manual for an example calculation, or the Emission Inventory Criteria Guidelines for reporting guidance). For more information on setting up a prioritization analysis, see Chapter 8 in the HARP User Guide.

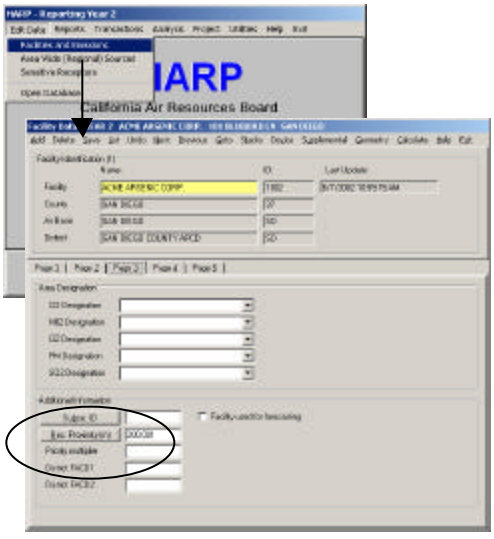
Prioritization scores are used to determine which facilities shall complete a health risk assessment for the "Hot Spots" Program. Prioritization scores should not to be interpreted as estimates of potential health impacts. Only a health risk assessment can provide those types of estimates. This functionality is intended for District use.

Prerequisite

Before you can run a prioritization analysis, you must first add your facility and emissions data into the CEIDARS-Lite emissions inventory database within HARP (See Topic 2 in the HARP How-To Guides for instructions).

Step 1. Calculating Receptor Proximities

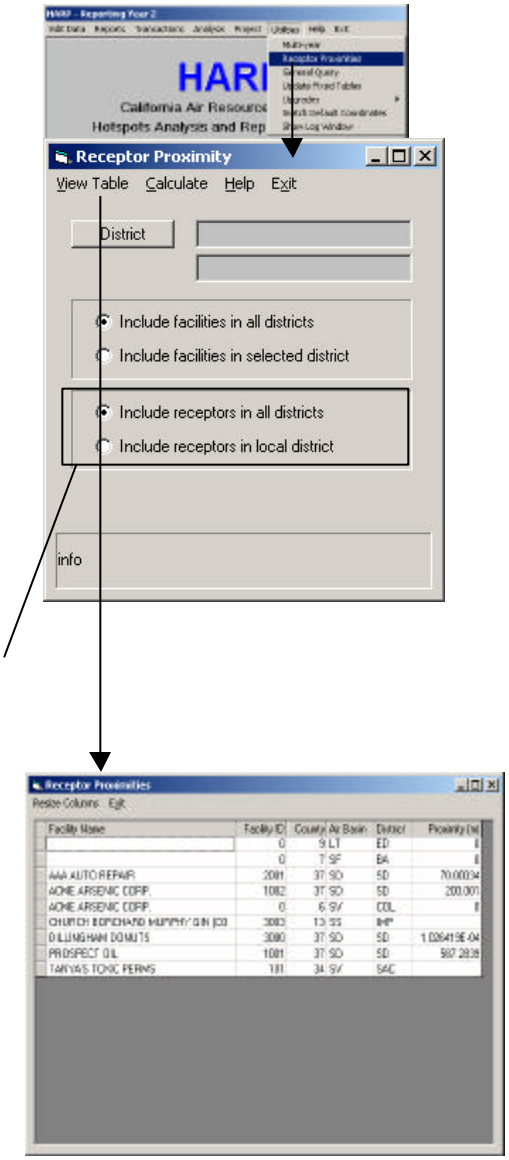
Receptor proximities are required to perform a prioritization analysis. If you have not done so already, you must enter the ***Rec. Proximity (m)*** field on Page 3 of the ***Facility Data*** window. You must do this for each facility you wish to include in the prioritization analysis. If applicable, also enter a value in the ***Priority Multiplier*** field. This factor is used to adjust a facility score. For example, this could be used if a facility emits multipathway pollutants (see the HARP User Manual and the CAPCOA prioritization guidelines for more information).



1. To begin, select ***Edit Data/Facilities and Emissions*** from the HARP main menu to enter the ***Facility Data*** window.
2. Choose a facility of interest by selecting ***List*** from the top menu. Then double click on the facility from the popup window. The ***Facility Data*** window will now display the selected facility.
3. Click the ***Page 3*** tab on ***Facility Data*** window and enter in the ***Receptor Proximity***. Note that if no value is entered for the receptor proximity, then HARP assumes that the distance is zero meters and no adjustment is made for the receptor proximity. If applicable, also enter a value in the ***Priority Multiplier*** field and select ***Save***. The priority multiplier could be

used, for example, if a facility emits multipathway pollutants or has receptors within 50 meters.

4. If you do not know the receptor proximity, it can be automatically calculated for you provided that you have set the facility boundary and entered the sensitive receptors. Press the ***Receptor Proximity*** button to automatically calculate the receptor proximity. For instruction on setting the facility boundary, see Topic 2 in the HARP How-To Guides. For instructions on inputting sensitive receptors, see Topic 3 in the HARP How-To Guides.
5. Alternatively, if you need to automatically calculate receptor proximities for several facilities in the manner as described above, select ***Utilities/Receptor Proximities*** from the HARP main menu to access the ***Receptor Proximity*** window.
6. If you want to calculate receptor proximities for a specific district, click the ***District*** button from the ***Receptor Proximity*** window. Then double click on the district from the popup window. Click on the ***Include facilities in selected district*** radio button. Then click on the ***Include receptors in local district*** radio button.
7. If you want to calculate receptor proximities regardless of the district, click the ***Include facilities in all districts*** radio button. Then click on the ***Include receptors in all districts*** radio button.
8. Next, click ***Calculate*** from the top menu.
9. To view or edit the calculated receptor proximities, click ***View Table*** from the ***Receptor Proximity*** window. Click ***Exit*** from the top menu when finished.



Step 2. Running the Prioritization Analysis

1a. To access the prioritization analysis window, click ***Calculate/Priority*** from the ***Facility Data*** window.

or

1b. From the HARP main menu, click ***Reports/Prioritization***.

2. In the ***Prioritization Report*** window, select one of the two radio buttons at the top. To calculate priorities for all facilities in a district, select the first top radio button. To calculate priorities for a single facility, select second radio button.

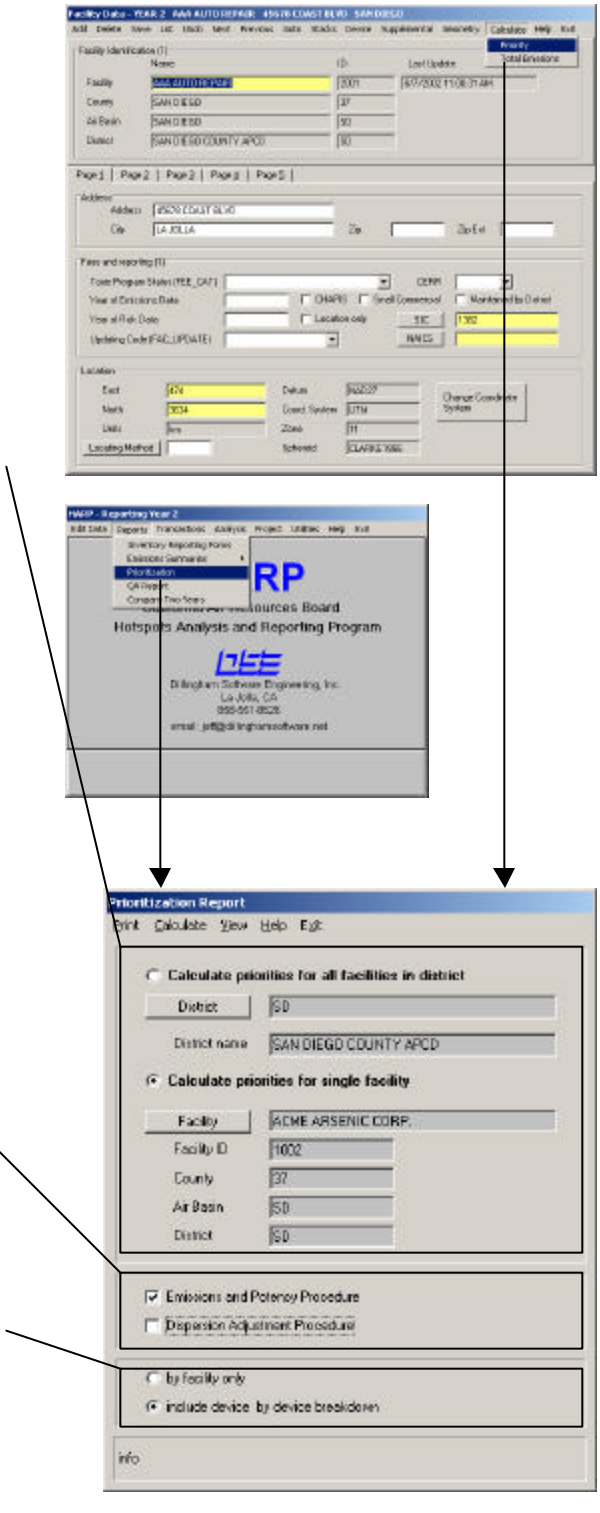
3. If you chose to calculate priorities for all facilities in a district, click the District button. To select a district, double click on a district from the popup window. You will then be returned to the Prioritization Report window with the selected district.

4. If you chose to calculate priorities for a single facility, click the Facility button. To select a facility, double click on a facility from the popup window. You will then be returned to the Prioritization Report window with the selected facility.

5. Next, use the check boxes to select which of the two calculation methods to use, either the Emissions and Potency Procedure or the Dispersion Adjustment Procedure, or both. If both methods are used, the total facility score will be the larger of the scores calculated by the two methods.

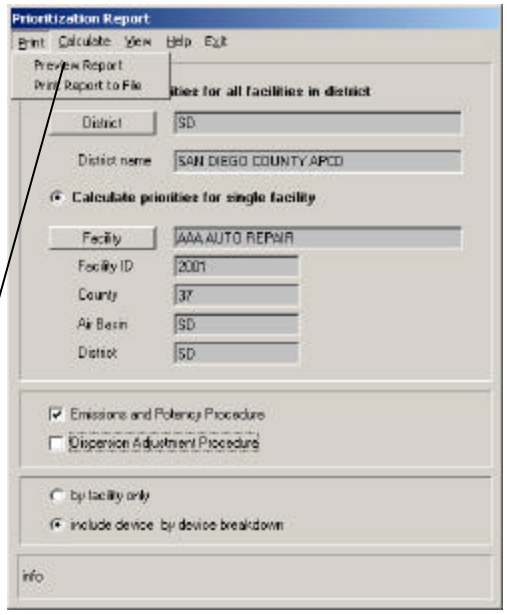
6. Next, use the bottom radio buttons to select whether you want the prioritization report to include by facility only or include a device by device breakdown.

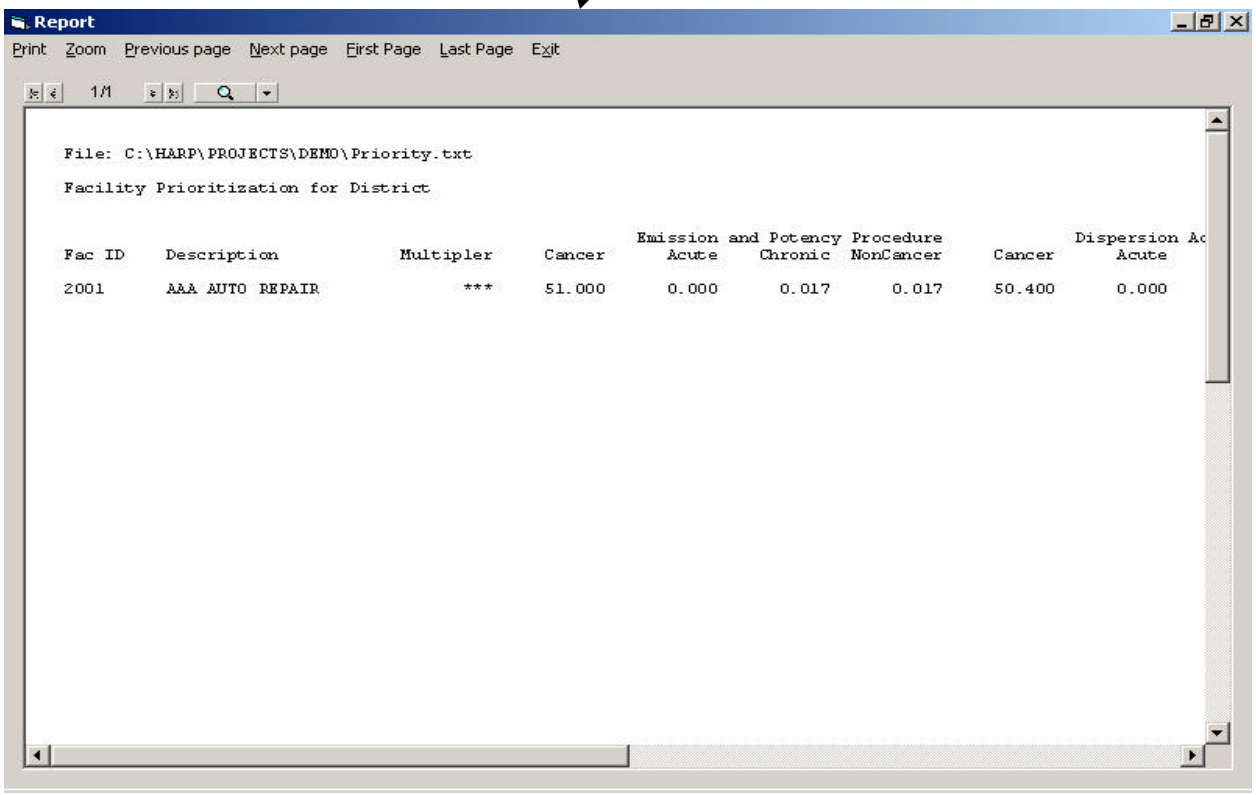
7. Select ***Calculate/Update Priority Database*** from the top menu to run the prioritization analysis.



Step 3. Displaying/Printing the Results

1. From the top menu of the ***Prioritization Report*** window, click ***Print/Preview*** to display the prioritization report. Select ***Print*** from the top of the ***Report*** window to print the report.
2. To save the report to a file, click ***Print/Print Report to File*** from the top menu of the ***Prioritization Report*** window.





Topic 5: How to Run an Air Dispersion Analysis

For the purpose of health risk assessments, the dispersion analysis module allows a user to build and run an input file for the U.S. EPA air dispersion model ISCST3 (Industrial Source Complex – Short Term 3). In HARP, ISCST3 is run in combination with the U.S. EPA building downwash model BPIP (Building Profile Input Program). For more information on setting up a dispersion analysis, see Chapters 4 and 9 in the HARP User Guide.

Prerequisite

Before you can run an air dispersion analysis, you must first add your emissions data into the CEIDARS-Lite emissions inventory database within HARP (See Topic 2 in the HARP How-To Guides for instructions). It is also necessary to set a default coordinate system (see Topic 1 in the HARP How-To Guides for information).

Step 1. Opening the Dispersion Analysis Module

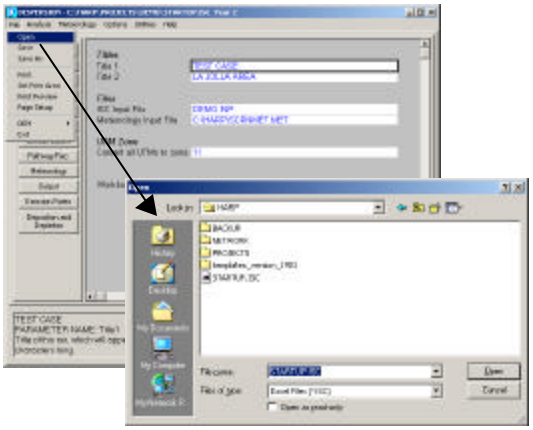
1. From the HARP main menu, select ***Analysis.***
   - If you have actual meteorological data that is representative of the location you are analyzing, use the dispersion module for representative met data; select ***Dispersion Analysis (Representative Met Data)***.
   - If you are using screening meteorology data, select ***Dispersion Analysis (Screening Met Data)***.

Step 2. Opening a Dispersion Analysis Workbook

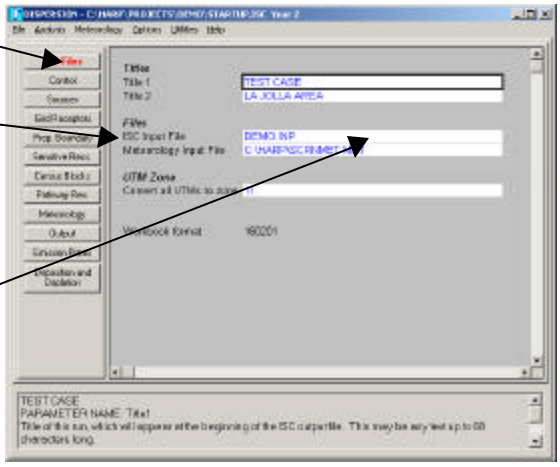
HARP will automatically open the last dispersion workbook used with your project directory. However, if there are no workbooks associated with your project directory, HARP will open a default workbook (STARTUP.ISC) in your project directory.

1.

HARP will create a default workbook called "STARTUP.ISC" if there are no workbooks associated with your project directory



2. Click on the ***ISC Files*** button on the left side of the Dispersion screen. Fill in the information for Titles, Files (e.g., meteorological input file), and UTM Zone (See Note 1). Then click ***File/Save As*** and save the file with a new name.



Note 1: All of the ISC input and output files created by HARP will have the same name as listed in the ISC Input File field. F2 will allow you to edit a cell without typing over the existing data.

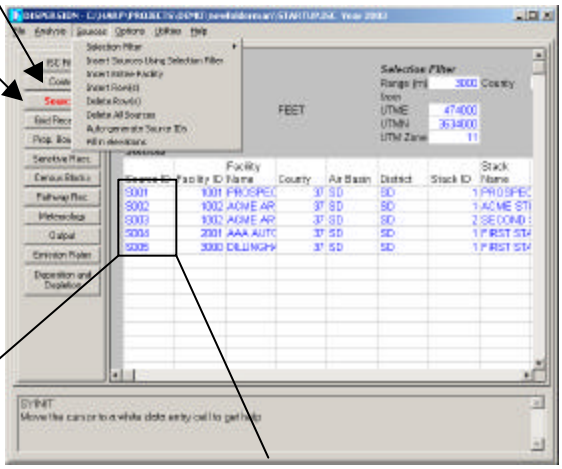
Step 3. Setting Control Parameters

1. To set the control parameters of how the analysis will be performed, click the ***Control*** button on the left side of the ***Dispersion*** screen. If you plan to use the regulatory defaults, then make no changes from the default settings.

Note 2: If your workbook was created from an existing workbook, it may contain existing facility data. You may need to clear this data before entering in the data for your analysis.

Step 4. Defining Emission Sources

1. Next you will need to define the emission sources and stack parameters. Click ***Sources*** button on the left side of the ***Dispersion*** screen.
2. Clear the preset data in this section of the workbook by selecting ***Sources/Delete All Sources*** from the top menu (See Note 2).
3. You may begin typing your data in manually or import it by clicking ***Sources/Insert Entire Facility*** from the top menu and pick a facility from the popup list (See Note 3).
4. HARP can automatically generate the ***Source ID*** column for you. Using your mouse, highlight all cells that need identification tags. Click ***Sources/Auto-generate Source IDs*** from the top menu to generate source identification tags.
5. Click ***File/Save*** to save the file.



To highlight the cells, click and hold the left mouse button and drag

Note 3: If you have already entered your facility data into the CEIDARS-Lite database, you may use the selection filter to import a group of facilities at one time from your database.

Step 5. Defining Receptor Grid

The Grid Receptors worksheet is used to describe the locations of receptors on a Cartesian grid using a facility as the origin. To begin, click the ***Grid Receptors*** button on the left side of the Dispersion screen. If you wish to exclude grid receptors in the dispersion analysis, type "NO" into the ***Include Grid*** field.

1. Click on ***Grid receptors/Set Origin to Facility*** from the top menu. Then select a facility to center the grid around.

2. Next, set the grid parameters. This will be the size of your grid and the distance between each grid point. In the fields under ***Grid Generation Parameters***, type in the minimum and maximum values for the north and east directions and the increments (See the illustration below for help with inputting).

3. Generate the grid by clicking ***Grid receptors/Generate Grid*** from the top menu. Finally, click ***File/Save*** from the top menu to save the file.

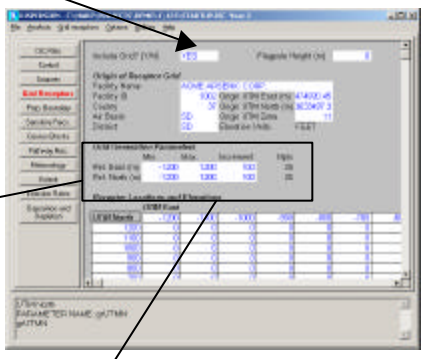
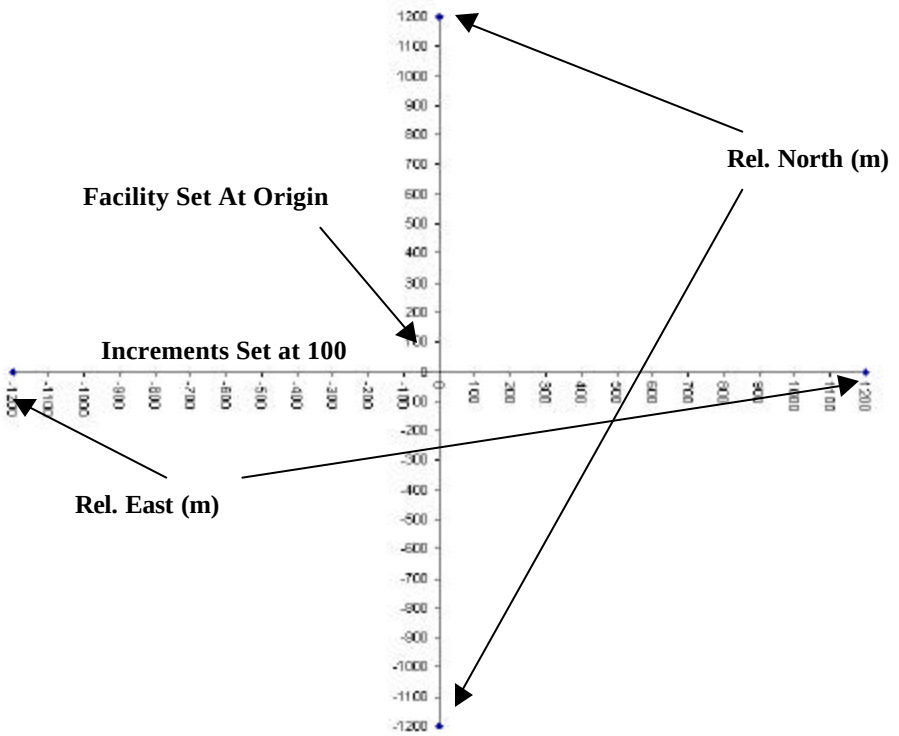
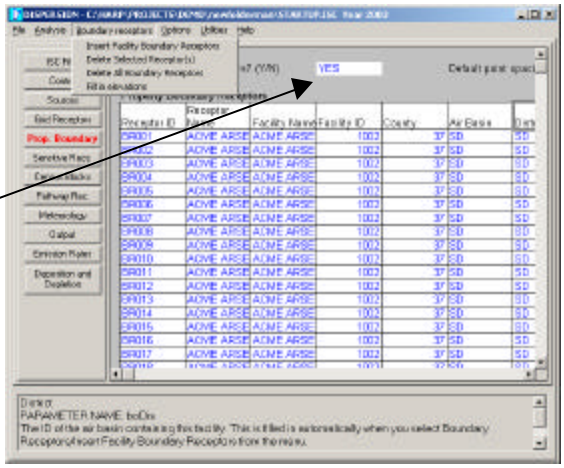


Illustration of the Grid Generation Parameter



Step 6. Defining Property Boundary Receptors



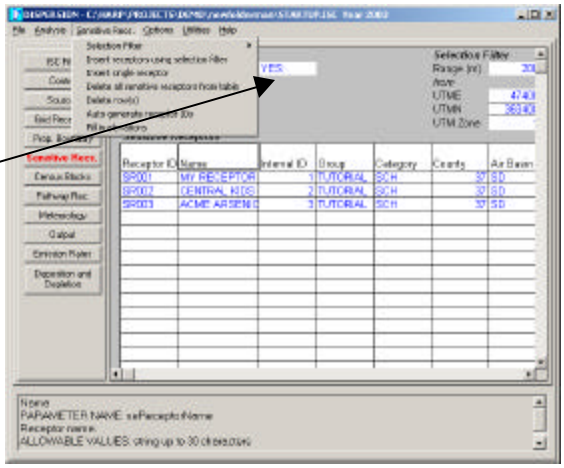
1. Property boundary receptors worksheet describes the locations of receptors on a facility property boundary. To define the receptors, start by clicking ***Prop. Boundary*** on the left side of the ***Dispersion*** screen. If you wish to exclude property boundary receptors in the dispersion analysis, type "NO" into the ***Include boundary receptors*** field.

2. Delete the boundary receptors from the previous workbook by clicking ***Boundary receptors/Delete All Boundary Receptors*** from the top menu (See Note 2).

3. Insert the property boundary receptors by clicking ***Boundary receptors/Insert Facility Boundary Receptors*** from the top menu. Then select a facility from the popup list.

4. Click ***File/Save*** from the top menu to save the file.

Step 7. Defining Sensitive Receptors

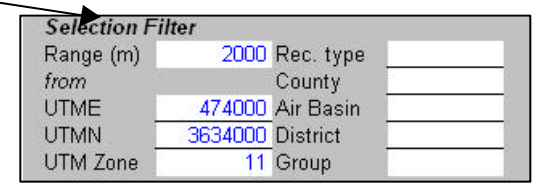


1. Sensitive receptors are specific points of interest (e.g., school). To add sensitive receptors, click ***Sensitive Recs.*** button on the left side of the ***Dispersion*** screen. If you wish to exclude sensitive receptors in the dispersion analysis, type "NO" into the ***Include Sensitive Receptors*** field.

2. Next, delete the existing receptor data from the workbook by clicking ***Sensitive Recs./Delete All Sensitive Receptors from table*** (See Note 2).

3. Insert the sensitive receptors that you would like to include in this analysis by using either the selection filter at the top of the window or picking the sources individually by clicking ***Sensitive Recs./Insert single receptor*** (See Note 3). This will add sensitive receptors that have been entered into the CEIDARS-Lite database. Sensitive receptor data can also be entered by hand directly into the sensitive receptor worksheet.

4. To use the selection filter, blank all the fields and type in the information you wish to use in your query for your receptors. Select ***Sensitive Recs./Insert receptors using selection filter*** from the top menu.

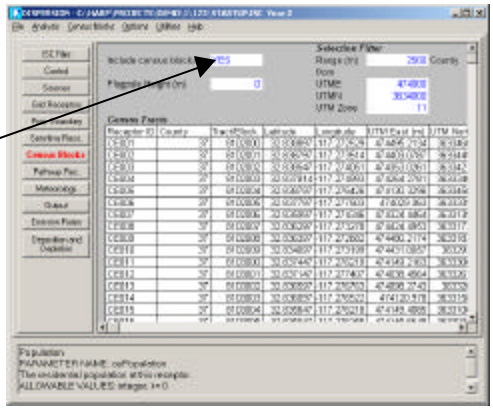


5. HARP can automatically generate the receptor identification tags for the ***Receptor ID*** column. Using your mouse, highlight all cells that need identification tags. To highlight the cells, click and hold the left mouse button and drag. Then click ***Sensitive Recs./Auto generate receptor IDs*** from the top menu to generate source identification tags.

6. Click ***File/Save*** from the top menu to save the file.

Step 8. Defining Census Block Receptors

1. Census block receptors will used to calculate population exposure and cancer burden. To add census receptors, click the ***Census Blocks*** button on the left side of the ***Dispersion*** screen. If you wish to exclude census block receptors in the dispersion analysis, type "NO" into the ***Include census block*** field.



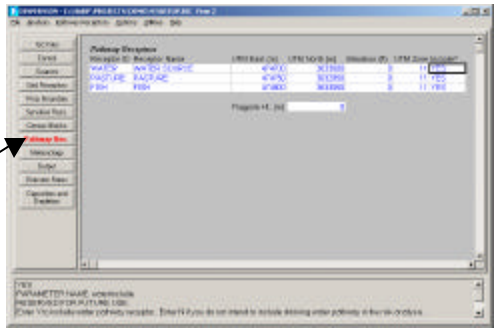
2. Delete the receptors from the previous workbook by clicking ***Census Blocks/Delete All Census Block Receptors*** from the top menu (See Note 2).

3. To select a set of census blocks around a facility, click ***Census Blocks/Selection Filter/Set section filter to origin to facility location*** from the top menu and select the facility. Enter a value into the range box. HARP will add all of the census block that are within this distance of the selected facility. Then click on ***Census Blocks/Insert Receptors Using Selection Filter*** from the top menu to import the census blocks.

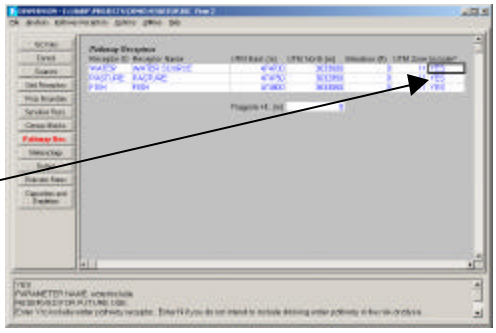
4. Click ***File/Save*** from the top menu to save the file.

Step 9. Defining Pathway Receptors

1. If you need to run a multipathway risk analysis, there are three pathway receptors that may be required. Click on the ***Pathway Rec.*** button on the left side of the ***Dispersion*** screen.



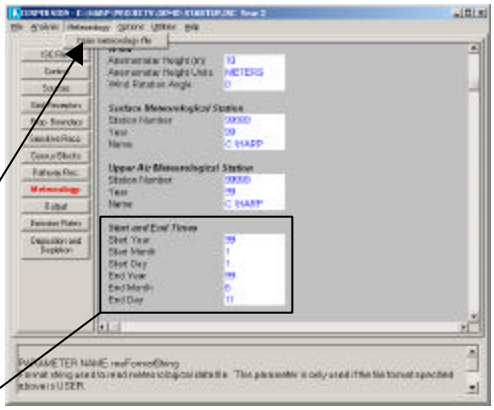
2. Enter the UTM coordinates and UTM zone for the water source, pasture land, and fishing water body.
3. Type "YES" into the last field of each pathway you wish to include in the multipathway risk analysis. Type "No" into the last field for pathways you do not intend to include in a multipathway risk analysis.



Step 10. Opening the Meteorology File (Only for Representative Data)

This step is only for the representative data version of the Dispersion Analysis module from Step 1. If you chose to use the screening meteorology version of the Dispersion Analysis module proceed to Step 11, the screening meteorology file has already been loaded for you.

1. Hourly meteorological data is needed to conduct a dispersion analysis. Click the ***Meteorology*** button on the left side of the ***Dispersion*** screen.
2. If you chose to use the representative meteorology version of the Dispersion Analysis module in the Step 1, you must now select the meteorology file. Click ***Meteorology/Open meteorology file***. Select a file.
3. Finally, confirm the meteorology parameters on the ***Dispersion*** screen corresponds to your file. Here is where you can also change start and end dates.

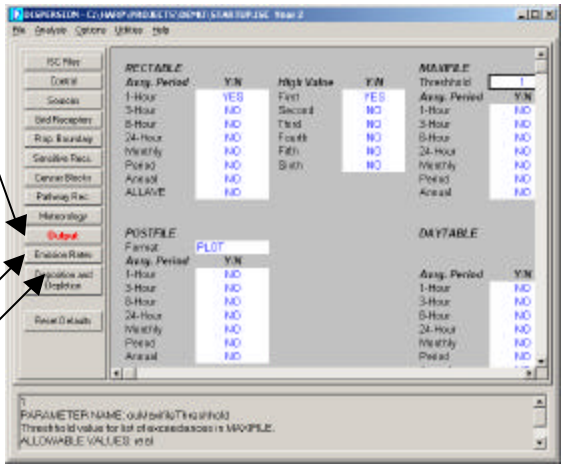


Step 11. Checking the Output Parameters

1. Click on the ***Output*** button on the left side of the Dispersion screen. The information in this window tells ISC how to create the output files. Most of the time you will keep the defaults.

Step 12. Options for Advance Users

1. The ***Emission Rates*** and ***Deposition and Depletion*** option is for advanced users. See the User Guide for more information.



Step 13. Adding Elevation Data

You can add data from DEM files to the entire Dispersion Analysis Workbook in two steps.

1. Open DEM files by selecting, ***Files/DEM/Open File.*** Browse and select the desired file.
2. Select ***Utilities/Look up all elevations*** from the menu.
3. After completing Step 1 through 13, select ***File/Save***.

Step 14. Building and Running ISCST3 Input

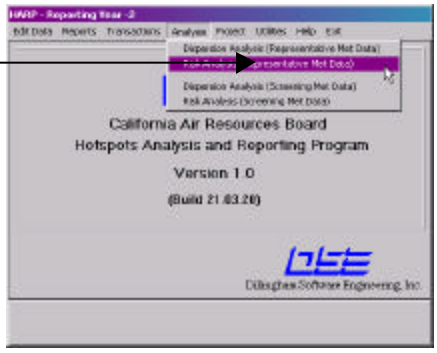
After you have completed each worksheet you are now ready to run ISCST3. Click on ***Analysis/Build ISC3 Input and Run***. Behind the scenes HARP will run ISCST3 and BPIP. All ISCST3 input and output files will be saved to your project directory. Exit the dispersion module and return to the HARP main menu. The dispersion analysis is complete.

Topic 6: How to Perform a Point Estimate Risk Analysis

Prerequisites

Before you can conduct a health risk analysis, you must first add your emissions data into the CEIDARS-Lite emissions inventory database within HARP and run an air dispersion analysis (See Topics 2 and 5 in the HARP How-To Guides for instructions). For more information on setting up a risk analysis, see Chapters 4 and 10 in the HARP User Guide.

Step 1. Opening the Risk Analysis Module

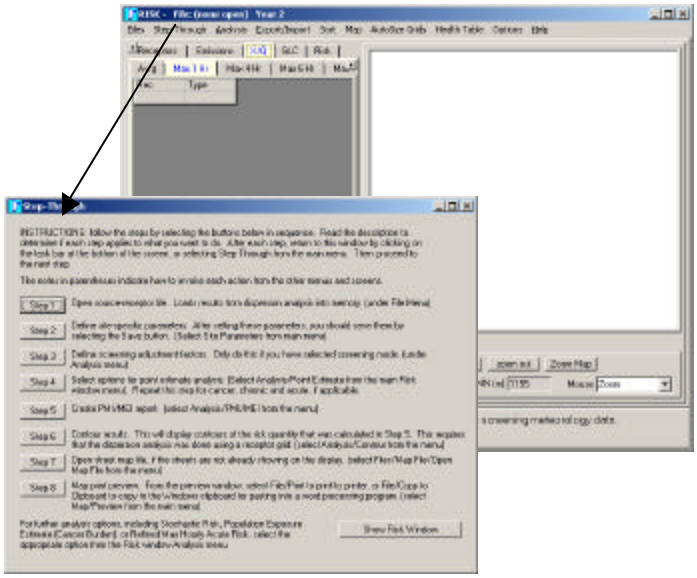


1. From the HARP main menu, select ***Analysis.***
   - If you have completed an air dispersion analysis using representative meteorology, select ***Risk Analysis (Representative Met Data)***.
   - If you have completed an air dispersion using screening meteorology data, select ***Risk Analysis (Screening Met Data)***.

Step 2. Opening the Step-Through Window

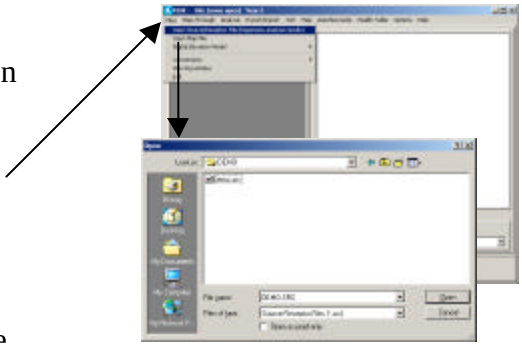
The Step-Through window guides users through the most common functions of the risk analysis process. A user can also perform these functions directly from the top menu of the main risk window.

1. To open the Step-Through window, click on the ***Step-Through*** menu item at the top of the main Risk window.



Step 3. Opening the Source/Receptor (SRC) File

The SRC file contains a list of sources and receptors used in the dispersion analysis and connects the dispersion results to the corresponding stack information in the CEIDARS-Lite database. It was created during the air dispersion analysis run and saved to your project directory (See Topic 5 in the HARP How-To Guides). The file name is the same as the ISC input, but with an "src" file extension.

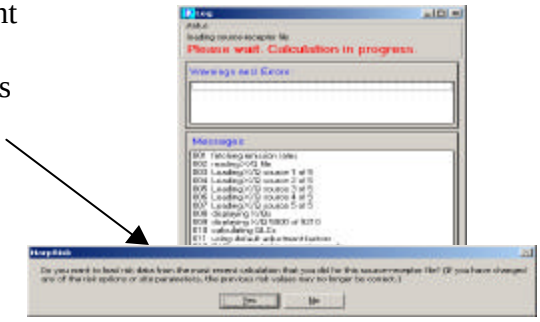


1a. On the ***Step-Through*** window, click ***Step 1***. Click on the SRC file. Click ***Open***.

or

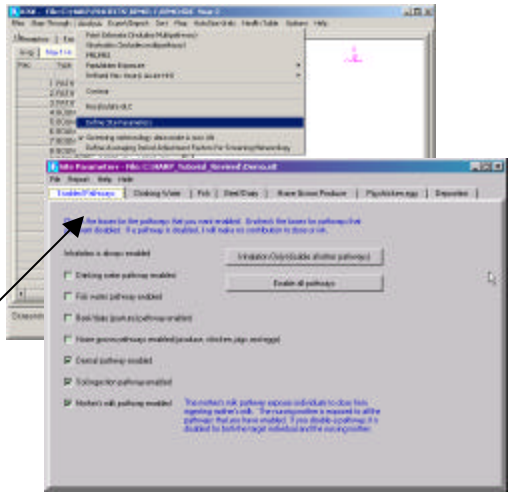
1b. From the main ***Risk*** window, select ***File/Open Source/Receptor File (Dispersion analysis results)***. Click on the SRC file. Click ***Open***.

2. If you have previously used this SRC file to calculate risk, HARP will ask if you want to load the most recent risk calculations associated with this SRC file. Click ***NO***, if you are going to do more calculations using this data. Click ***YES***, if the point estimate risk data calculations are complete and you are viewing, printing, or conducting a stochastic analysis.



3. HARP will automatically hide the X/Q and GLC values. To display these values, uncheck the menu item under ***Options/Display GLC and X/Q Details***. When this item is checked, the GLC and X/Q values will be displayed immediately.

Step 4. Defining Site-Specific Parameters

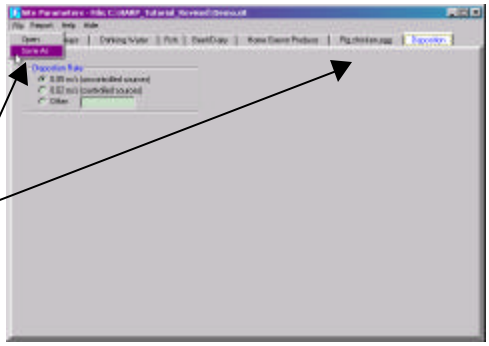


1a. On the ***Step-Through*** window, click ***Step 2***. This will open the ***Site Parameters*** window.

or

1b. From the main ***Risk*** window, select ***Analysis/Define Site Parameters***. This will open the ***Site Parameters*** window.

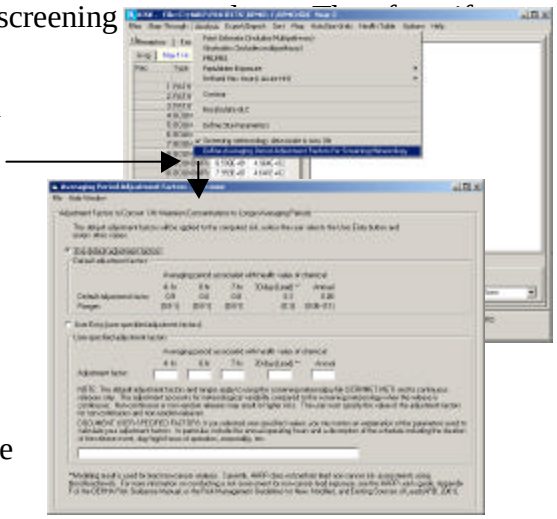
2. Click on the ***Enabled Pathways*** tab.



3. Place a check next to each pathway you wish to include in the point estimate risk analysis.
4. If you enable the drinking water, fish, pasture, and homegrown pathways you will need to add the required information in the corresponding tabs.
5. Choose a deposition rate under the ***Deposition*** tab.
6. Click ***File/Save As*** to save the file for future runs or click ***Hide*** at the top menu to use these inputs during this current HARP session only.
7. Click ***Hide*** to close the ***Site-Specific Parameters*** window.

Step 5. Defining Screening Adjustment Factor

Averaging Period Adjustment Factors are only used with screening you are using representative meteorology skip to Step 6.



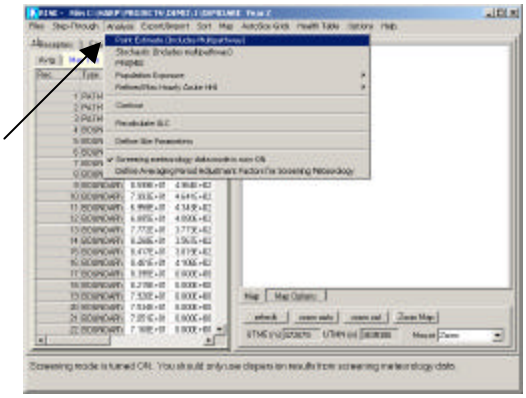
1a. On the ***Step-Through*** window, click ***Step 3***. This will open the ***Site Parameters*** window.

or

1b. From the main ***Risk*** window, select ***Analysis/ Define Averaging Period Adjustment Factors for Screening Meteorology***. This will open the ***Averaging Period Adjustment Factors*** window.

2. Use the default adjustment factors or enter your own under user defined. (For information on how to use the averaging period adjustment factors, see Section 9.6.2 of the User Guide.)
3. Hide or close the ***Averaging Period Adjustment Factors*** window.

Step 6. Setting up Point Estimate Risk Analysis

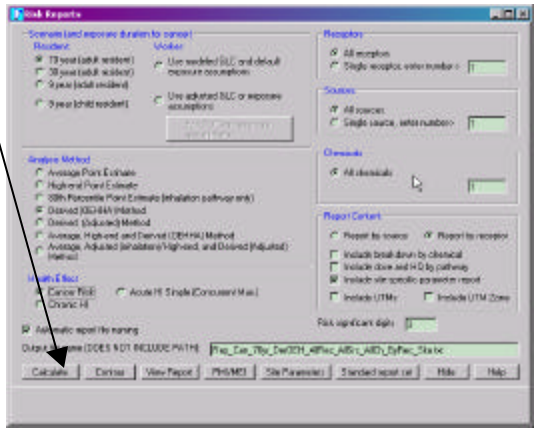


1a. On the ***Step-Through*** window, click ***Step 4***. This will open the ***Risk Reports*** window.

or

1b. From the main ***Risk*** window, select ***Analysis/Point Estimate (Includes Multipathway)***. This will open the ***Risk Reports*** window.

2. Click on the button next to each item that you would like to include in the risk analysis.
3. Click ***Calculate***. HARP will show you a preview of the report. Save the report to project directory. Close the report.
4. At this point, the risk values will be added to the data view window. Click on the risk tab on the right side of the main risk window. The cancer, chronic, and acute risk values will be displayed. If no value has been calculated a –1.00E+00 will be displayed for each receptor.
5. Repeat steps 2-3 for all other scenarios you wish to calculate



Step 7. Creating a PMI/MEI Report

If you don't wish to create a PMI/MEI report, skip to Step 8.

1a. On the ***Step-Through*** window, click ***Step 5***. This will open the ***PMI/MEI Report*** window.

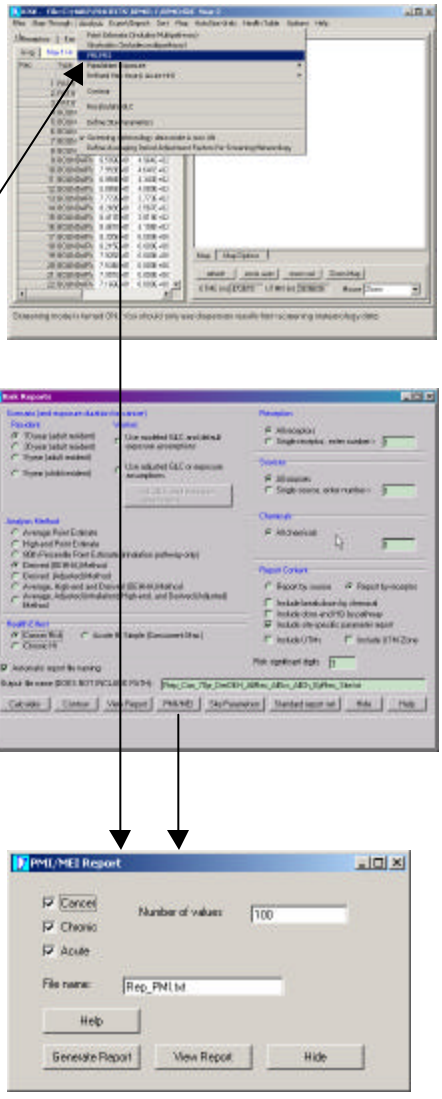
or

1b. From the main ***Risk*** window, select ***Analysis/PMI/MEI***. This will open the ***PMI/MEI Report*** window.

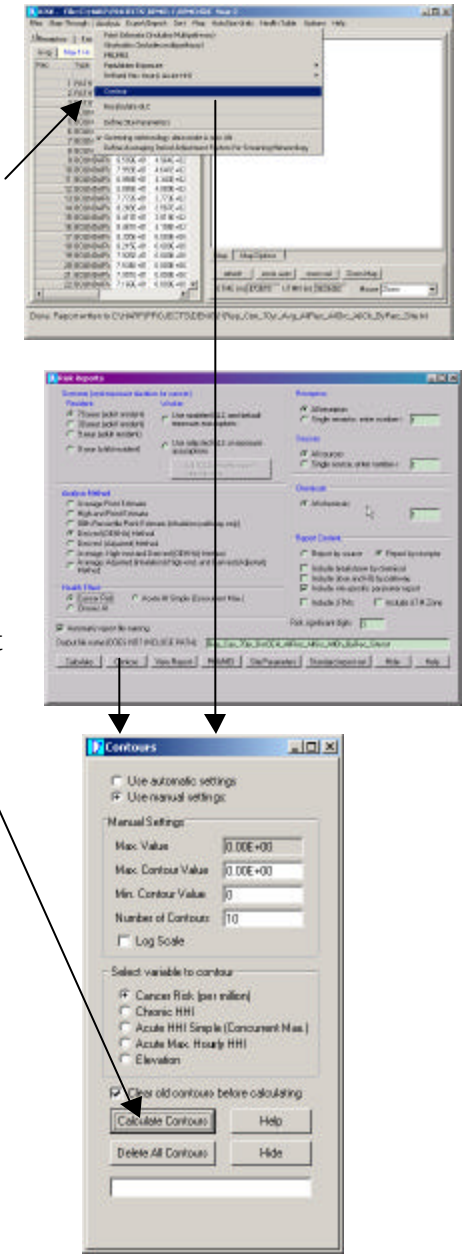
or

1c. From the ***Risk Reports*** window, click on the ***PMI/MEI*** button. This will open the ***PMI/MEI Report*** window.

2. Place a check next to each health effect (cancer, chronic, acute) you wish to include. Verify the number of values you want in the report, and the file name.
3. Click ***Generate Report***. HARP will show you a preview of the report. Save the report to your project directory. Close the Report. Then close the ***PMI/MEI Report*** window.



Step 8. Creating a Contour



1a. On the ***Step-Through*** window, click ***Step 6***. This will open the ***Contour*** window.

or

1b. From the main ***Risk*** window, select ***Analysis/Contour***. This will open the ***Contour*** window.

or

1c. From the ***Risk Reports*** window, click on the ***Contour*** button. This will open the ***Contour*** window.

2.a Automatic Settings: The automatic settings will create contours that bound the risk data between the highest risk value and zero. The number of contours that you define will divide the risk results into evenly spaced intervals between these two points.

Select the button next to ***Use automatic settings***. Select ***Cancer Risk*** to contour the cancer risk. Click ***Calculate Contours***. The mapped results will appear on the ***Risk*** window.

2.b Manual Settings: To manually identify the contours, check the box ***Use Manual Setting***. The number of contours should be one number greater than the number of intervals that you want your data divided into (i.e., if 5 intervals of data is desired, enter 6 contours).

For example, if you want to see just two isopleths at 1 and 10 chances per million: Set the ***Max. Contour Value*** to 10 and the Set ***Min. Contour Value*** to 1, and set ***Number of Contours*** to 2. Click ***Calculate Contours***. The contours will be displayed on the map when the calculation is done.

or

If you want to see multiple isopleths at 1, 10, 100, and 1000 chances per million: Set the ***Max. Contour Value*** to 1000 and the Set ***Min. Contour Value*** to 1, and set ***Number of Contours*** to 4 and check the log scale box. Click ***Calculate Contours***. The contours will be displayed on the map when the calculation is done.

Important Notes on Contours

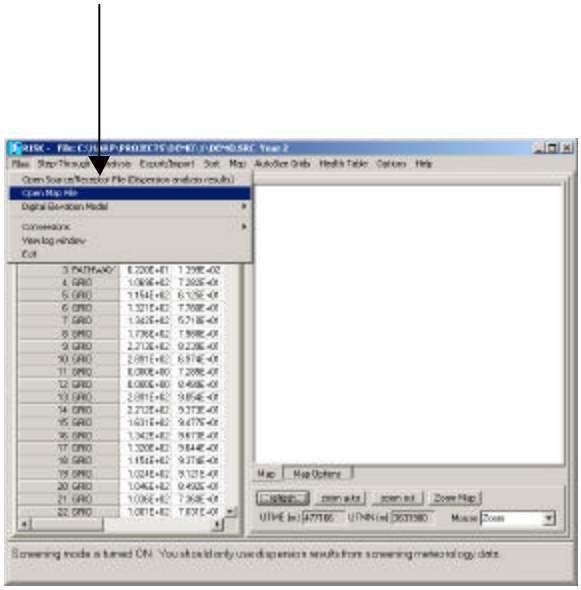
- The contour isopleths can only be generated using **grid receptors**.
- HARP will plot the last risk that was calculated. If you choose to run a risk analysis for "average, high-end and derived", the risk contours that will be plotted will be for "derived". If you run the OEHHA standard report set, HARP will plot the 70-year, cancer, derived (adjusted) scenario from Report #19.
- HARP plots cancer risk contours in units of "chances per million". Hazard Indices for non-cancer results are shown as actual Hazard Index Values.
- If HARP will not calculate the contours, there may not be enough data. At least three points of data (grid receptors) at that contour range are needed to make an isopleth. You should also look at your risk data to confirm that your maximum and minimum contour values are within the range of your data or you may need to rerun the dispersion analysis with smaller grid spacing.

Step 9. Opening a Street Map

1a. On the ***Step-Through*** window, click ***Step 7***. Browse to the map you wish to load. Click ***Open*** button.

or

1b. From the main ***Risk window***, select ***Files/Open Map File***. Browse to the map you wish to load. Click ***Open*** button.



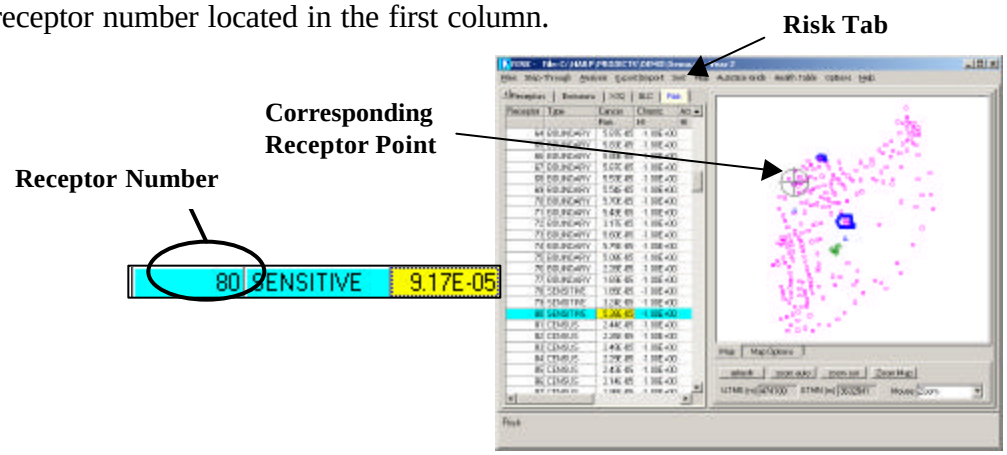
Topic 7: How to Perform a Stochastic Evaluation

Prerequisites

Before you can conduct a stochastic evaluation, you must first add your emissions data into the CEIDARS-Lite emissions inventory database within HARP and run an air dispersion analysis (See Topics 2 and 5 in the HARP How-To Guides for instructions). For more information on setting up a stochastic analysis, see Chapters 4 and 10 in the HARP User Guide.

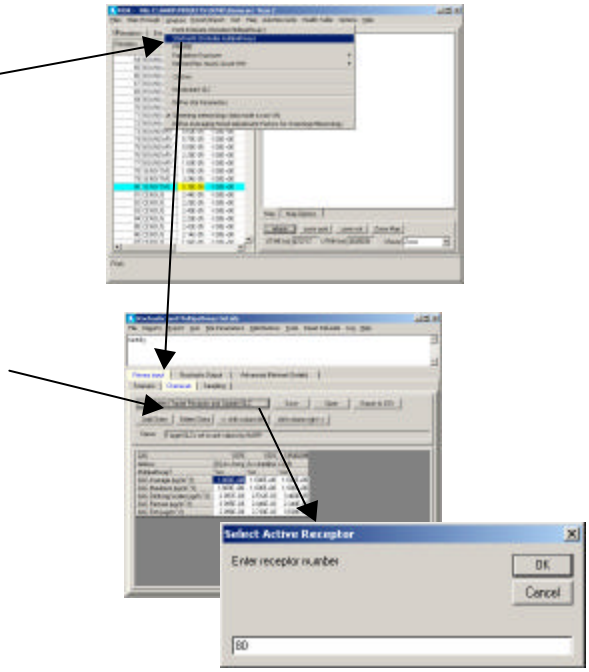
Step 1. Choosing a Receptor

The first step in conducting a stochastic evaluation is choosing a receptor. To do this, access the risk analysis module from the HARP main menu and run a point estimate risk analysis as described in Topic 6 in the HARP How-To Guides. Examine the results by clicking the ***Risk*** tab in the ***Risk*** window. Choose the receptor that you would like to run a stochastic analysis on and note the receptor number located in the first column.



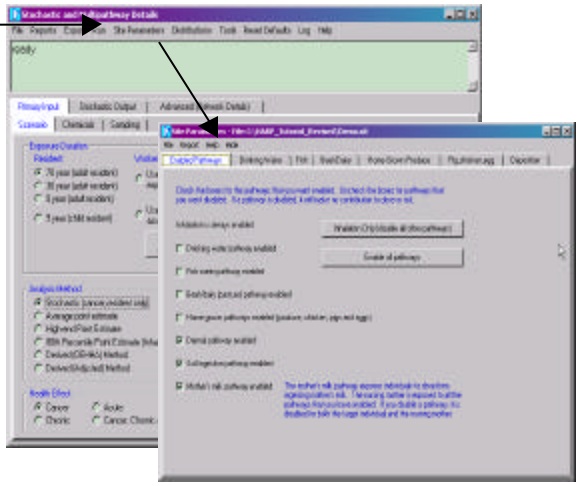
Step 2. Setting up and Running a Stochastic Simulation

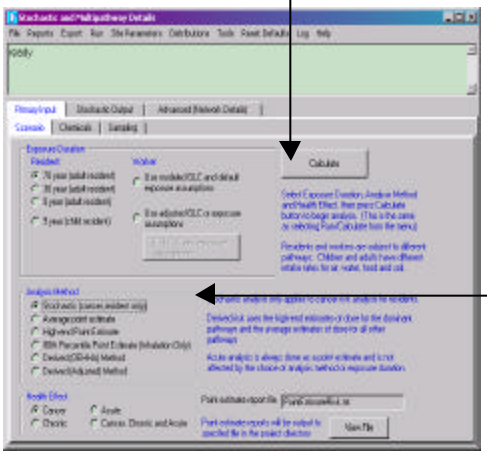
1. From the main ***Risk*** window, select ***Analysis/Stochastic (Includes Multipathway)***
2. Select the ***Primary Input*** tab and then click the ***Chemicals*** tab to access the chemical concentration data.
3. Click the button labeled ***Select Target Receptor and Update GLC*** and enter the receptor number that you noted in Step 1 into the popup window. HARP will then load the chemical names and ground level concentrations from your receptor.



Note 1: You may add a new chemical to the list by pressing the *Add Chem* button. You may delete a chemical from the list by pressing the *Delete* button. This does not affect any of the numbers on the main *Risk* window or in the HARP database.

4. Select the ***Site Parameters*** from the top menu and verify that the parameters are correct for your site. To save any changes, click ***File/Save As*** and then close the window by clicking on ***Hide*** (top menu).
5. Next, set the sampling parameters by clicking the ***Sampling*** tab and set the sampling parameters.
6. Set the exposure duration, analysis method and health effect under the ***Scenario*** tab. Make sure stochastic is checked in the analysis method.
7. Finally, press the ***Calculate*** button to start the simulation.

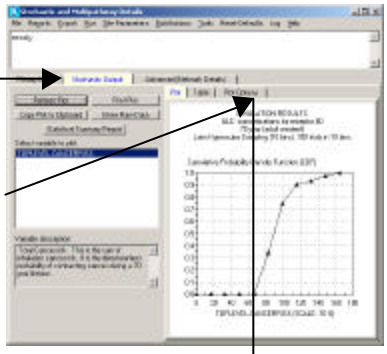




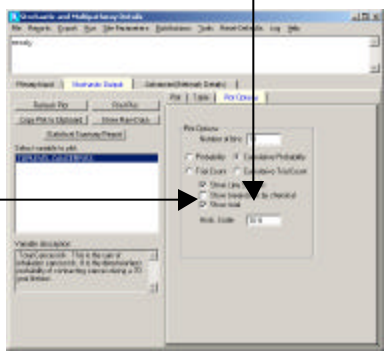
Note 2: As the scenario window indicates, you have the option of performing point estimate risk analysis at this point also. However, it will only be for a single receptor.

Make sure that "Stochastic" is selected under the analysis method.

Step 3. Viewing the Results

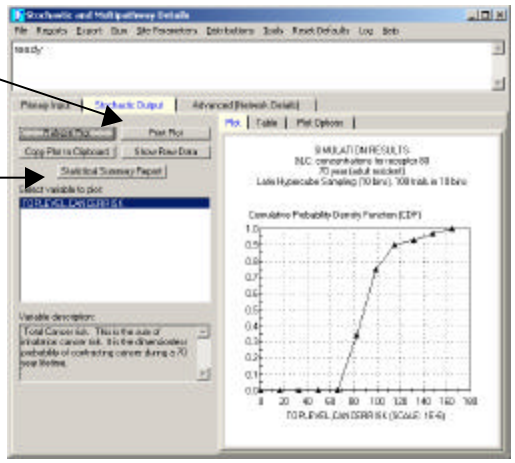


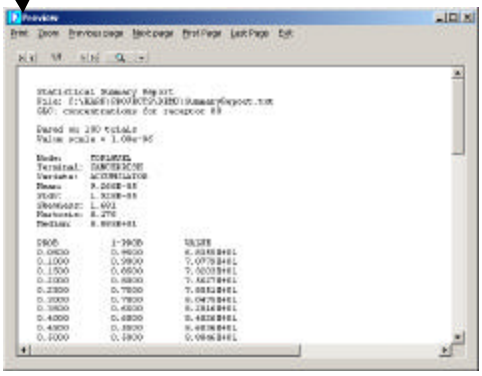
1. To view the results, click on the ***Stochastic Output*** tab and click on the ***Refresh Plot*** button. The graph shown is the cumulative probability distribution of cancer risk.
2. To change the graph, click on the ***Plot Options*** tab. From here, you may select a different plot type or change the horizontal scale. Press ***Refresh Plot*** to update the graph.
3. It is recommended that you change the scale to an appropriate one for plotting cancer risk. To do this, type "1E-6" into to ***Horiz. Scale*** field. This scales all values on the horizontal axis by multiplying them by 1,000,000. Press ***Refresh Plot*** to update the graph.
4. To display the statistical risk distribution for each of the chemicals individually, check the box next to ***Breakdown by Chemical*** in ***Plot Options***. Then press ***Refresh Plot*** to update the graph. For more information on changing the plot options and saving other variables to plot, see Chapter 10 in the HARP User Guide.



Step 4. Printing the Results and Generating a Statistical Summary Report

1. To print the graph, click on the ***Print Plot*** button.
2. To create a summary report, click ***on Statistical Summary Report*** button.
3. Once the report has been generated, a window will popup showing a preview of the report. Click Print to save the report to a file (See Note 4).

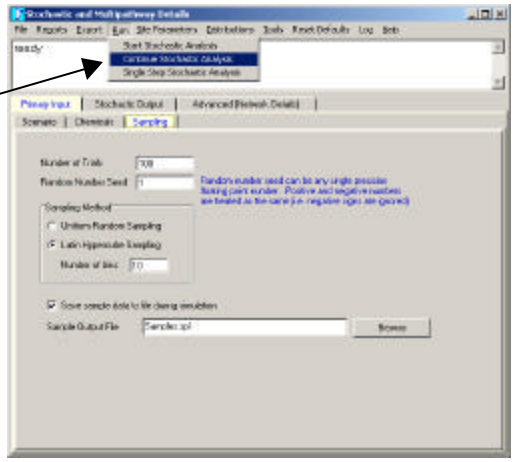




Note 4: The report will be written in the project directory. The report is an ASCII file that can be imported into a word processor.

Step 5. Continuing a Simulation

1. Select the ***Primary Input*** tab and then the ***Sampling*** tab.
2. Set the number of trials. Select ***Run/Continue Stochastic***.
3. The simulation now continues from where it left off. If it is not interrupted, it will continue until the total of number of trials have been executed. For example, your first run consists of 100 trials. After analyzing the results, you wish to continue the simulation to 200 trials. Set the number of trials to 200 and select ***Run/Continue Stochastic***. The simulation restarts at 101 and continues until 200.



Topic 8: How to Perform Health Analyses Using a Ground Level Concentration

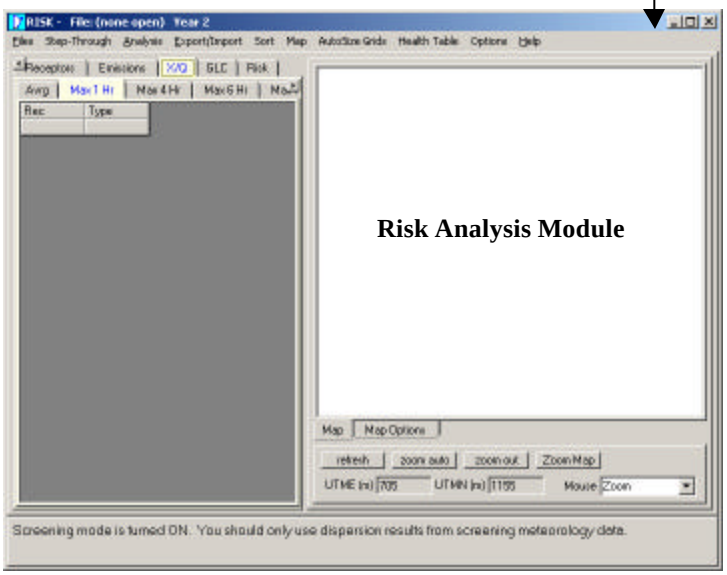
This topic addresses how to run a health analysis by manually inputting a GLC value for one or more substances using the results from an outside air dispersion run. There are two paths described below that can be used to achieve this analysis. In future releases, HARP will address the need for electronically accepting the output from an air dispersion modeling run that is performed outside of the HARP Software. For more information on setting up a risk analysis, see Chapters 4 and 10 in the HARP User Guide.

A. Adding a Substance-Specific GLC as a Background Concentration and Running a Point-Estimate Health Risk Analysis

The first method will allow you add a GLC for each substance across an entire receptor grid and run a multipathway point-estimate risk analysis. This method could be used for evaluating the contribution of background pollutants. Substance- specific GLC values can be added through the emissions information in the risk window as a background concentration. The GLC value that you enter will be applied to every receptor in the file as a background concentration.

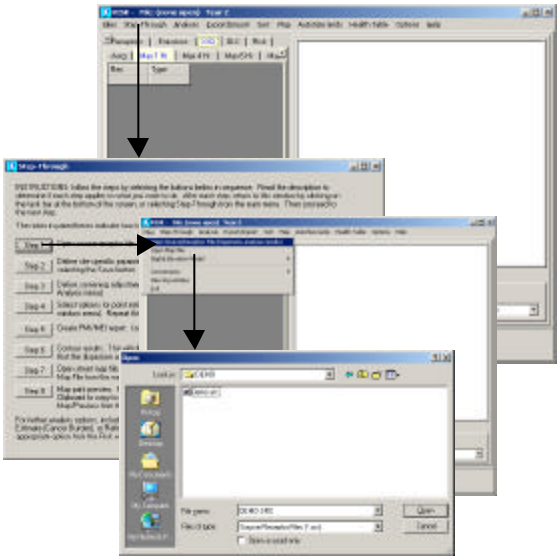
Step 1. Opening the Risk Analysis Module

1. From the HARP main menu, select ***Analysis.***
   - If you have completed an air dispersion analysis using representative meteorology, select ***Risk Analysis (Representative Met Data)***.
   - If you have completed an air dispersion analysis using screening meteorology data, select ***Risk Analysis (Screening Met Data)***.



Step 2. Opening the Source/Receptor (SRC) File

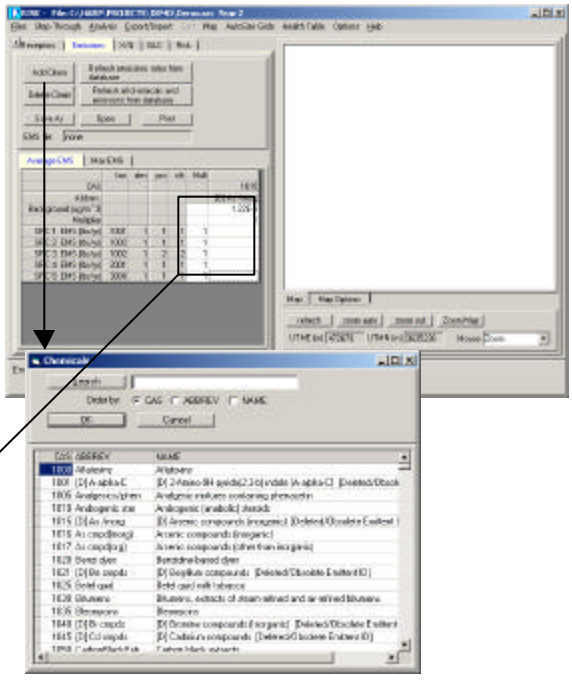
Use the Step-Through window to access SCR file. Open the SRC file for your project or use the demo SRC file (C:\HARP\PROJECTS\DEMO\Demo.src). This demo SRC file provides a surrogate receptor grid from an air dispersion modeling run. This file will be used as a template when inserting your background GLC value.



1. To open the Step-Through window, click on the ***Step-Through*** menu item at the top of the main Risk window.
2. On the ***Step-Through*** window, click ***Step 1***. Click on the desired SRC file. Click ***Open***. If you have previously used this SRC file to calculate risk, HARP will ask if you want to load the most recent risk calculations associated with this SRC file. Click ***NO***, if you are going to do more calculations using this data. Click ***YES***, if the point estimate risk data calculations are complete and you are viewing, printing, or conducting a stochastic analysis.

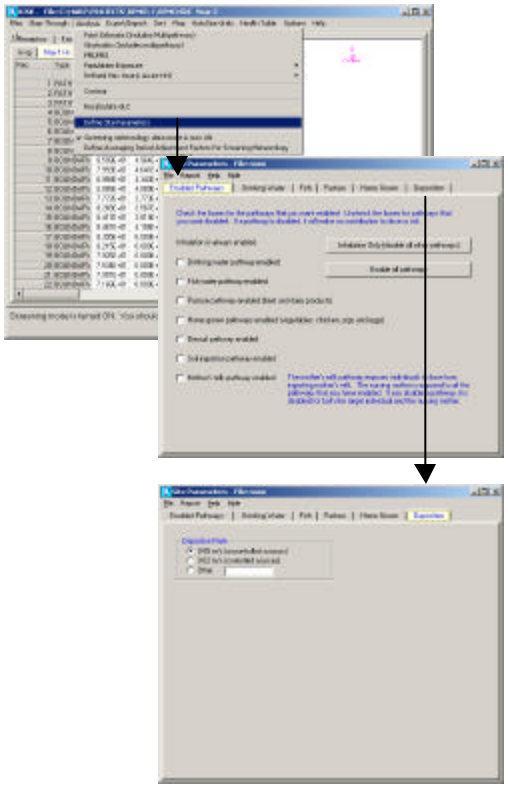
Step 3. Define the Pollutants and the Background Concentrations

Identify the pollutants of interest and specify the ground level concentration for each pollutant (See Chapter 10 in the HARP User Guide for more information).



1. Click on the ***Emissions tab***.
2. Add and/or delete chemicals using the ***Add Chem*** or ***Delete Chem*** buttons.
3. To delete a chemical from the emissions page, highlight the column for that substance and press the ***Delete Chem*** button.
4. To add a chemical, select the ***Add Chem*** Button and the screen on the right shows up. Enter the name of the chemical in the blank and press ***Search***. A list of pollutants will appear for you to select from. Highlight the pollutant of interest and press ***OK.*** The substance will be added to the list of pollutants on the Emissions Page.
3. For each substance that is included in the background assessment, insert the GLC value into the background row, insert a one (1) into the multiplier row, and blank out the source emissions for each substance.

Step 4. Defining Site-Specific Parameters



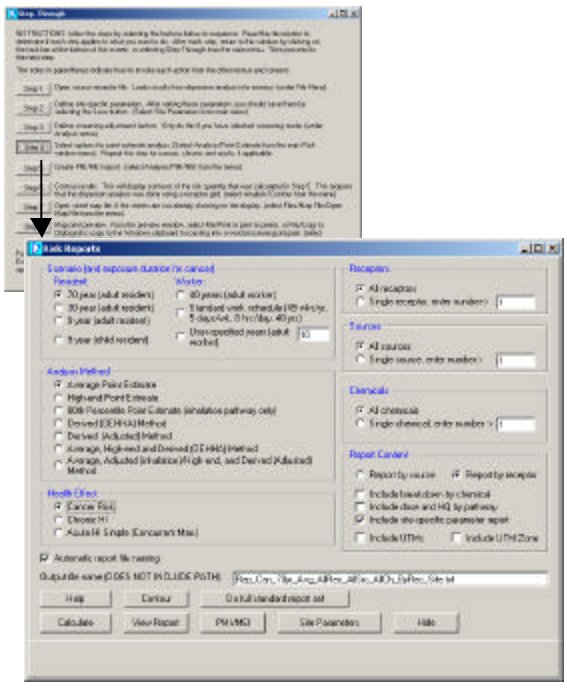
1a. On the ***Step-Through*** window, click ***Step 2***. This will open the ***Site Parameters*** window.

or

1b. From the main ***Risk*** window, select ***Analysis/Define Site Parameters***. This will open the ***Site Parameters*** window.

2. Click on the ***Enabled Pathways*** tab.
3. Place a check next to each pathway you wish to include in the point estimate risk analysis.
4. If you enable the drinking water, fish, pasture, and homegrown pathways you will need to add the required information in the corresponding tabs.
5. Choose a deposition rate under the ***Deposition*** tab.
6. Click ***File/Save As*** if you wish to save the file.
7. Click ***Hide*** (top menu) to close the ***Site-Specific Parameters*** window.

Step 5. Set up the Point-Estimate Risk Analysis



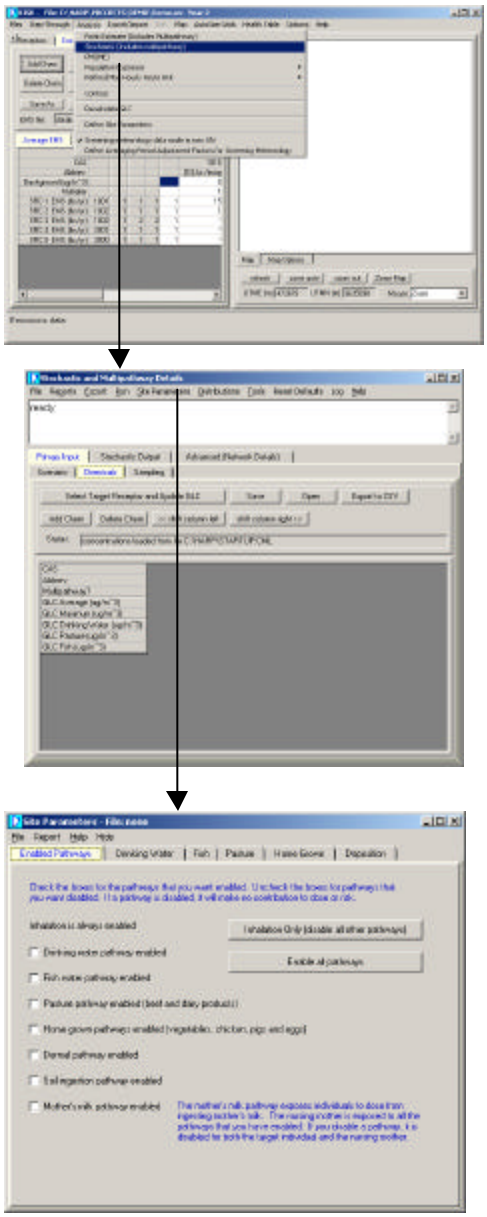
1. On the ***Step-Through*** window, click ***Step 4***. This will open the ***Risk Reports*** window. (See Topic 5 in the HARP How-To Guides or Chapter 10 in HARP User Guide for more information).
2. Click on the button next to each item that you would like to include in the risk analysis.
3. Click ***Calculate***. HARP will show you a preview of the report. Close Report.
4. At this point, the risk values will be added to the data view window. Click on the risk tab on the right side of the main risk window. The cancer, chronic, and acute risk values will be displayed. If no value has been calculated a –1.00E+00 will be displayed for each receptor.
5. Repeat steps 2-3 for all other scenarios you wish to calculate

B. Performing a Stochastic Risk Analysis for a Single Receptor Without A Dispersion Analysis

The second method will allow you to analyze a single receptor only, but you can enter different GLC values for the target receptor and each of the three pathway receptors. This second method will allow you to run a multipathway point-estimate or stochastic analysis. This is done by entering the ground level concentrations directly on the *Stochastic and Multipathway Details* window and proceeding with the risk analysis without ever running a separate dispersion analysis. To perform the second method, see the steps below or refer to Chapter 10 in the HARP User Guide. Topic 7 in the HARP How-To Guides describes how to run a stochastic analysis.

Step1. Setting up and Running a Stochastic Simulation

1. From the main ***Risk*** window, select ***Analysis/Stochastic (Includes Multipathway)***
2. Select the ***Primary Input*** tab and then click the ***Chemicals*** tab to access the chemical concentration data.
3. Use the ***Add Chem*** or ***Delete Chem*** buttons to create the list of pollutants. The method is the same as described in Step 3 above.
4. Enter the ground level concentrations at the location(s) of interest. The drinking water, pasture, and fish GLC's are used for multipathway analysis.
5. Select the ***Site Parameters*** from the top menu and verify that the parameters are correct for your site. If you enable the drinking water, fish, pasture, and homegrown pathways you will need to add the required information in the corresponding tabs. To save any changes beyond this run, click ***File/Save As*** and then close the window by clicking on ***Hide***.



6. Next, set the sampling parameters by clicking the ***Sampling*** tab and set the sampling parameters (i.e., number of trials, random number seed, sampling type, and bins).
7. Identify the variable(s) to plot for viewing. The default plot is the total cancer risk. Use the ***Advanced Network Details*** button to identify any additional variables that you want to keep a record of for plotting. See Chapter 10 in the HARP User Guide and Topic 7 in the HARP How-To Guides for more information on plotting features.
8. Under the ***Scenario*** tab, set the exposure duration, analysis method, and health effect. Make sure stochastic is checked in the analysis method. Note that if you only want a point-estimate report, not a stochastic analysis, you can select one of the point-estimate options under the *Analysis Method* section under the Scenario tab.
9. Press the ***Calculate*** button to start the simulation.
10. Once the simulation is complete, press ***Refresh Plot*** and the plot that is highlighted will appear in the window.
11. Press the button, ***Statistical Summary Report*** to produce a tabular report. This will be saved to a file and folder that you designate, but will open automatically in HARP after it is named.

See Chapter 10 in the HARP User Guide and Topic 7 in the HARP How-To Guides for more information on viewing results, plot options, and contouring maps.